

**Notice of Allowability**

Application No.

10/723,166

Applicant(s)

RAMAN ET AL.

Examiner

Art Unit

Said Broome

2628

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--**

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/26/06.
2. ☒ The allowed claim(s) is/are 1-4, 6-11 and 13-19.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

**Attachment(s)**

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

## **DETAILED ACTION**

### ***Examiner's Amendment***

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Miriam Kaplan on October 26, 2006.

Amend claims 1, 9 and 18 as follows:

Claim 1: In lines 3-5 of claim 1 delete the phrase "points comprising said boundary pairs are at least two voxels apart", and insert the phrase "said vessel has a minimum slab thickness of 4 voxels" after the word wherein and before the semicolon(;). In line 8 of claim 1 insert the phrase "and displaying" after the word viewing and before the word in.

Claim 9: In lines 4-5 of claim 9 insert the phrase ", wherein said vessel has a minimum slab thickness of 4 voxels;" after the word image and before the semicolon(;), and in lines 9-10 of claim 9 delete the phrase "wherein points comprising said boundary pairs are at least two voxels apart,". Also, in limitation (vii) delete the (.) and insert "; and (vii) displaying results of said assigning.".

Claim 18: In lines 6-7 of claim 18 insert the phrase "said structure of interest has a minimum slab thickness of 4 voxels" after the word wherein and before the word points, and in lines 7-8 of claim 18 delete the phrase "points comprising said boundary pairs are at least two

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voxels apart”. Also, in limitation (e) delete the (.) and insert “; and (f) displaying results of said sequencing.”.

***Allowable Subject Matter***

Claims 1-4, 6-11 and 13-19 are allowed. The following is an examiner’s statement of reasons for allowance:

The prior art, Parker et al. (US Patent 6,674,894) and Frangi et al. (*Model-based Quantitation of 3-D Magnetic Resonance Angiographic Images*, 1999) do not teach all the limitations of claims 1-4, 6-11 and 13-19.

Regarding claim 1, Parker et al. describes a method for viewing a vessel in an image with a three-dimensional volume in column 4 lines 1-13. Parker et al. also describes determining adjacent points or boundary pairs in the view plane that are also described to define a vessel in column 11 lines 28-36 and in column 4 lines 36-48. Parker et al. describes determining at least one vessel-intensity for each boundary pair in column 11 lines 28-33 where it is described that the intensity of all neighboring points, or boundary pairs, are determined to be above the average background value, in which if the points are not above the average background value, then the neighboring points are included in the generated vessel, as described in column 11 lines 33-36. Parker et al. also describes viewing in the projection plane along each projection path of the multi-dimensional image a plurality of adjacent points, or boundary pairs, in column 4 lines 36-48 and describes viewing the vessel intensities in column 11 lines 28-36. However, the prior art fails to teach the vessel has a minimum slab thickness of 4 voxels.

Regarding claim 9, Parker et al. describes a method for viewing a structure of interest, such as a vessel, in an image with a three-dimensional volume, in column 4 lines 1-13. Parker et al. also teaches projecting a line in the view direction of the plane in column 4 lines 36-39. Parker et al. teaches determining a boundary pair that defines the structure of interest along the line of projection in column 4 lines 36-48 and in column 11 lines 28-36. Parker et al. teaches determining an intensity for the structure of interest, or vessel, enclosed by the boundary pair in column 11 lines 28-33. Parker et al. also teaches determining the intensity for structures surrounded by the boundary pair in column 11 lines 28-36. However, the prior art fails to teach the vessel has a minimum slab thickness of 4 voxels.

Regarding claim 18, Parker et al. describes a process of generating an animation viewing option of the structure of interest in column 7 lines 23-28. Parker et al. also describes defining a plurality of image projection planes in column 4 lines 64-67 and column 5 lines 1-5, as shown in Figure 18. Parker et al. also describes determining a plurality of boundary pairs, or adjacent points, which are points defining the structure of interest (column 11 lines 28-36) in the view plane associated with the projection plane in column 4 lines 36-45. Parker et al. also describes determining the intensity for the structure of interest, or vessel, associated with the boundary pairs in column 11 lines 28-36. Parker et al. describes defining the view of the structure of interest based on the intensities of the boundary pairs in the projection plane in column 2 lines 58-63 where it is described that the maximum intensity projection selects the maximum intensity along each projection line, and defines the view of the structure of interest, or vessel as described in column 11 lines 28-36. Parker et al. describes sequencing through the plurality of projection


planes in column 7 lines 23-28. However, the prior art fails to teach the vessel has a minimum slab thickness of 4 voxels.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Said Broome whose telephone number is (571)272-2931. The examiner can normally be reached on 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on (571)272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

S. Broome   
10/26/06

  
ULKA CHAUHAN  
SUPERVISORY PATENT EXAMINER